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SABELLIPHILID COPEPODS (POECILOSTOMATOIDA) ASSOCIATED WITH CNIDARIANS IN THE PHILIPPINES

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ABSTRACT

Four sabelliphilid copepods are reported from cnidarians at Bohol Island in the Philippines. *Forhania philippinensis* new genus, new species, from the gorgonaceans *Acabaria rubeola* and *Suberogorgia reticulata,* has unusual sexual dimorphism in the first and second maxillae and a 2-segmented endopod in leg 4. *Thamnomolgus nodulus* new species, from the antipatharian *Antipathes* sp., has a conspicuous knob on the second segment of the male maxilliped and the endopod of leg 1 in the male is not sexually dimorphic. *Thamnomolgus robustus* Humes, 1969, is recorded from *Antipathes* sp. *Camotesia bullifera* new genus, new species, occurs on *Antipathes* sp., and is characterized by a 3-segmented endopod in leg 4 where the third segment is small, spherical, and unarmed.

Copepods associated with cnidarians in the Philippines are not well known. Recently, specimens from alcyonaceans at Bohol Island have been studied. A new species of the lichomolgid genus *Acanthomolgus* is associated with the alcyonacean *Dendronephthya* (*Roxasia*) *puetteri* Kükenthal (see Humes, in press). The asterocherid *Acontiophorus excavatus* Humes, 1989, is associated with an unidentified alcyonacean (Humes, 1989). In this paper sabelliphilid copepod associates of gorgonaceans and antipatharians at Bohol are described.

The copepods were collected by Thomas Forhan during SCUBA diving while on the Alpha Helix East Asian Bioluminescence Expedition in 1975. They were measured and dissected in lactic acid. The drawings were made with the aid of a camera lucida. To avoid incorporating possible aberrant features, descriptions and figures were based on a series of paratypes, at least three of both sexes when sufficient numbers were available. Holotypes and allotypes, specimens chosen for their undamaged condition, were preserved undissected in 70% ethyl alcohol. The lengths of the segments in the first antenna were measured along their posterior nonsetiferous margins. The length of the body does not include the setae on the caudal rami. The abbreviations used are: A_1 = first antenna, A_2 = second antenna, MD = mandible, MX_1 = first maxilla, and P_1 = leg 1.

Poecilostomatoida Thorell, 1859
Sabelliphilidae Gurney, 1927

Forhania new genus

Diagnosis.—Sabelliphilidae. Urosome 5-segmented in female, 6-segmented in male. Caudal ramus with convex inner margin. Rostrum with truncate posteroventral margin. First antenna 7-segmented. Second antenna 4-segmented with 1 terminal claw. Mandible with unilaterally barbed blade. First maxilla with 2 small processes in female, in male these greatly enlarged. Second maxilla in female bearing small process in addition to terminal spine, in male this process greatly enlarged. Maxilliped in female 3-segmented, in male 4-segmented with proximal part of claw representing fourth segment. Legs 1–4 with 3-segmented rami except 2-segmented endopod in leg 4. Third segment of endopod of leg 3 armed with II,2. Leg 4 with third segment of exopod having II,I,5; endopod with 0-1;1. Leg 5 with free segment bearing 2 setae. Other features as in the species described below.

Type Species.—*Forhania philippinensis* new species.

Gender.—Feminine.

Etymology.—The genus is named for the collector, Thomas Forhan.

Remarks.—*Forhania* resembles *Thamnomolgus* Humes, 1969, in several easily recognized features: (1) body form, (2) nature of rostrum and labrum, with subtruncate posteroventral margins, and (3) last segment of endopod of leg 3 with formula II,2. The new genus differs significantly from *Thamnomolgus* as follows: (1) first and second maxillae sexually dimorphic, with long hyaline digitiform lobes in male, (2) endopod of leg 4 2-segmented with formula 0-1;1; and (3) segment of leg 5 in male free, not fused with body segment.

Forhania philippinensis new species
Figures 1a–g, 2a–m, 3a–e

Type Series.—Holotype ♀, allotype, and 215 paratypes (137 ♀♀, 78 ♂♂) deposited in the National Museum of Natural History, Smithsonian Institution, Washington. Other paratypes, 6 ♀♀, 5 ♂♂, dissected, in the collection of the author. All the specimens were collected from the gorgonacean *Acabaria rubeola* (Wright and Studer), in 40 m, Bohol Island, Philippines, 10°17.9′N, 124°10.9′E, 21 August 1975. Thomas Forhan collector.

Other specimens, not part of type series.—3 ♀♀, 3 ♂♂ from *Acabaria rubeola*, in 40 m, Bohol Island, 21 August 1975; 5 ♀♀, 4 ♂♂ from the gorgonacean *Suberogorgia reticulata* (Ellis and Solander), in 30 m, Bohol Island, 21 August 1975.

Female.—Body (Fig. 1a) with expanded prosome. Average length 0.87 mm (0.83–0.91 mm) and greatest width 0.45 mm (0.43–0.46 mm), based on 10 specimens. Greatest dorsoventral thickness 0.26 mm. Segment bearing first pair of legs set off from head by weak transverse dorsal suture. Epimera of segments bearing legs 2 and 3 long and alate, those of segment bearing leg 4 much shorter and not alate. Ratio of length to width of prosome 1.31:1. Ratio of length of prosome to that of urosome 1.45:1.

Segment bearing fifth pair of legs (Fig. 1b) 52 × 133 μm. Genital segment 161 × 138 μm, longer than wide, with slightly irregular lateral margins. Genital areas located dorsolaterally in posterior half of segment. Each area with 2 minute setae. Three postgenital segments from anterior to posterior 31 × 68, 30 × 68, and 44 × 80 μm.

Caudal ramus (Fig. 1c) 85 × 35 μm, ratio 2.43:1, its inner margin slightly convex. Outer lateral seta 39 μm, dorsal seta 20 μm, outer terminal seta 34 μm, inner terminal seta 47 μm, and 2 median jointed terminal setae 81 μm (outer) and 94 μm (inner). All setae smooth. Two minute knobs at insertions of 2 outer setae.

Dorsal surface of prosome with many minute refractile pores.

Egg sac (Fig. 1d) elongate, 375 × 120 μm, containing 4 eggs with diameter 114–125 μm.

Rostrum (Fig. 1e) truncate posteroventrally. First antenna (Fig. 1f) 7-segmented, 159 μm long. Length of segments: 23 (31 μm along anterior margin), 47, 16, 26, 24, 12, and 13 μm, respectively. Formula for armature: 3, 10, 3, 3, 4, 2, and 7 + 1 aesthete. All setae smooth.

Second antenna (Fig. 1g) 4-segmented, 151 μm long in reflexed position, approximately 200 μm when stretched out. Formula: 1, 1, 3, and 1 terminal claw 38 μm long.

Labrum (Fig. 1e) with 2 lateral posteroventral lobes. Mandible (Fig. 2a) with hyaline blade 50 μm long, bearing minute spinules along one side. Paragnath (Fig. 2b) small lobe. First maxilla (Fig. 2c) with 2 small hyaline processes. Mandibles, paragnaths, and first maxillae concealed by labrum in ventral view as in Figure 1e. Second maxilla (Fig. 2d, e) 2-segmented, first segment with small terminal process or knob, second segment spikelike with spinules along one edge. Maxil-

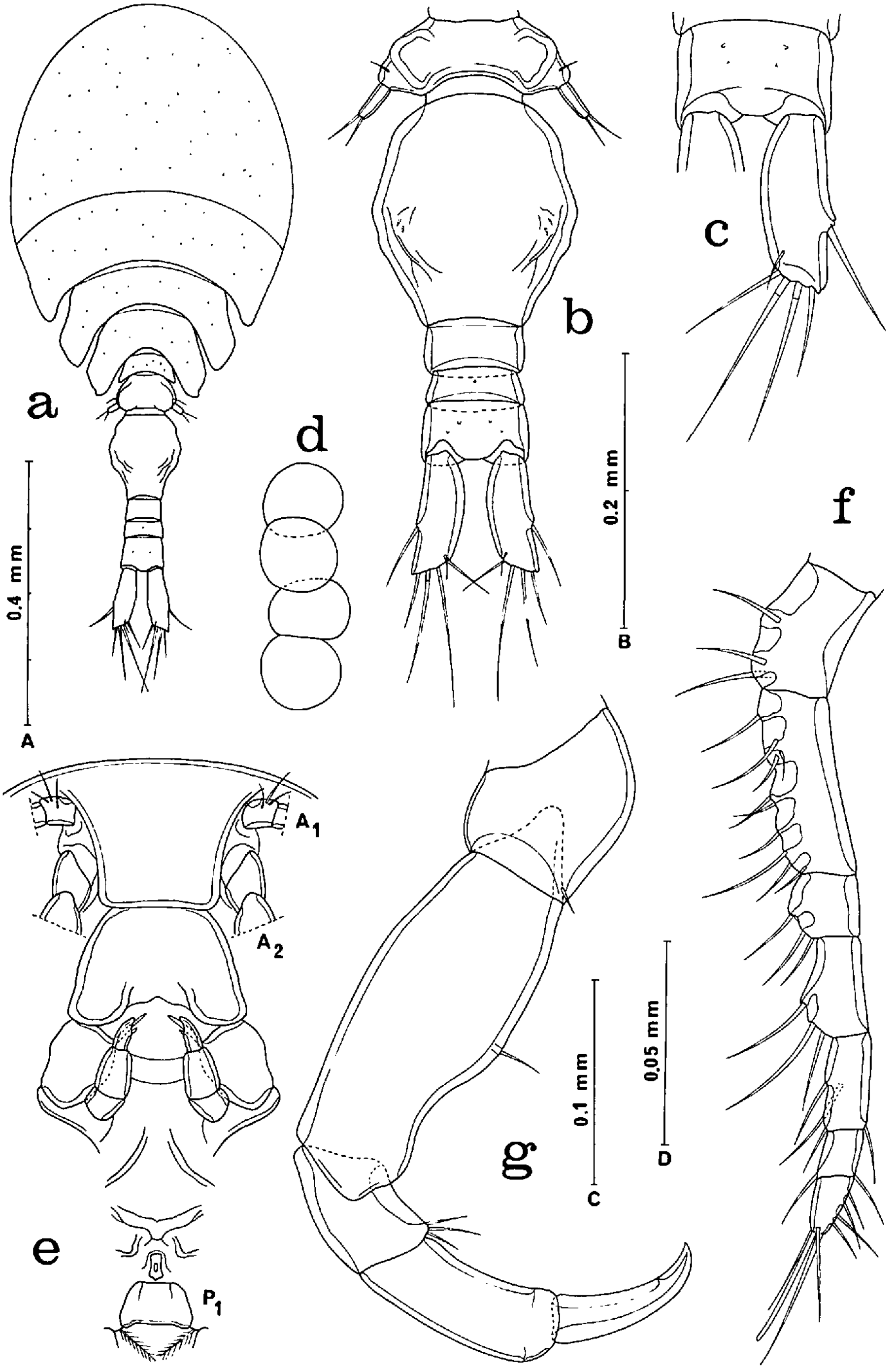

Figure 1. *Forhania philippinensis* new genus, new species, female. a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, anal segment and caudal ramus, dorsal (C); d, egg sac, ventral (A); e, rostrum, labrum, and area between maxillipeds and first pair of legs, ventral (B); f, first antenna, antero-outer (D); g, second antenna, inner (D).

liped (Fig. 2f) 3-segmented, 70 μm long, with 2 small setae on second segment and 1 seta on third segment.

Ventral area between maxillipeds and first pair of legs as in Figure 1e.

Legs 1–4 (Fig. 2g–j) with 3-segmented rami except for 2-segmented endopod in leg 4. Formula for armature as follows:

P_1	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,4
			enp 0-1;	0-1;	1,2,3
P_2	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	I,II,3
P_3	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	II,2
P_4	coxa 0-0	basis 1-0	exp I-0;	I-1;	II,I,5
			enp 0-1;	1	

Coxae of legs 2 and 3 having slight knob on outer proximal margin. Outer seta on basis short and inconspicuous in all 4 legs. Leg 4 (Fig. 2j) with exopod 148 μm long. Endopod (Fig. 2k) with first segment 21 × 9 μm, its distal inner plumose seta 52 μm. Second segment 20 × 8 μm with distal plumose seta 55 μm and offset medially.

Leg 5 (Fig. 2l) with unornamented slender free segment 29 × 8 μm, ratio 3.6:1. Two terminal smooth setae 23 μm and 18 μm. Leg 6 probably represented by 2 minute setae on genital area.

Color of living specimens unknown.

Male—Body (Fig. 2m) resembling in general form that of female. Average length 0.84 mm (0.77–0.88 mm) and greatest width 0.41 mm (0.33–0.46 mm), based on 10 specimens. Greatest dorsoventral thickness 0.22 mm. Ratio of length to width of prosome 1.23:1. Ratio of length of prosome to that of urosome 1.39:1.

Segment bearing leg 5 (Fig. 3a) 51 × 112 μm. Genital segment 180 μm long without leg 6, 216 μm long including leg 6, 187 μm wide. Pair of small refractile areas on ventral surface (Fig. 3b). Four postgenital segments from anterior to posterior 26 × 55, 18 × 55, 13 × 60, and 36 × 75 μm.

Caudal ramus like that of female but smaller, 80 × 32 μm, ratio 2.5:1.

Dorsal surface of prosome with many minute pores as in female.

Rostrum, first antenna, second antenna, labrum, mandible, and paragnath similar to those of female. First maxilla (Fig. 3c) with 2 long hyaline digitiform lobes with attenuated tips. Second maxilla (Fig. 3d) with long hyaline process 90 μm and spikelike terminal spine 44 μm. Maxilliped (Fig. 3e) 4-segmented, assuming proximal part of claw to represent fourth segment. Second segment much expanded, bearing 2 inner setae and group of 3 stout blunt spines proximally on inner margin. Claw 60 μm, with 2 unequal proximal setae.

Ventral area between maxillipeds and first pair of legs as in female.

Legs 1–4 like those of female, but small proximal knob on outer margin of coxa in legs 2 and 3 in female here absent.

Leg 5 (Fig. 3a) 17 × 8 μm, resembling that of female. Leg 6 (Fig. 3b) posteroventral flap on genital segment, extending beyond posterior border of genital segment as triangular process bearing 2 very small setae.

Spermatophore not seen.

Color of living specimens unknown.

Etymology.—The specific name denotes the geographical area where the copepods were found.

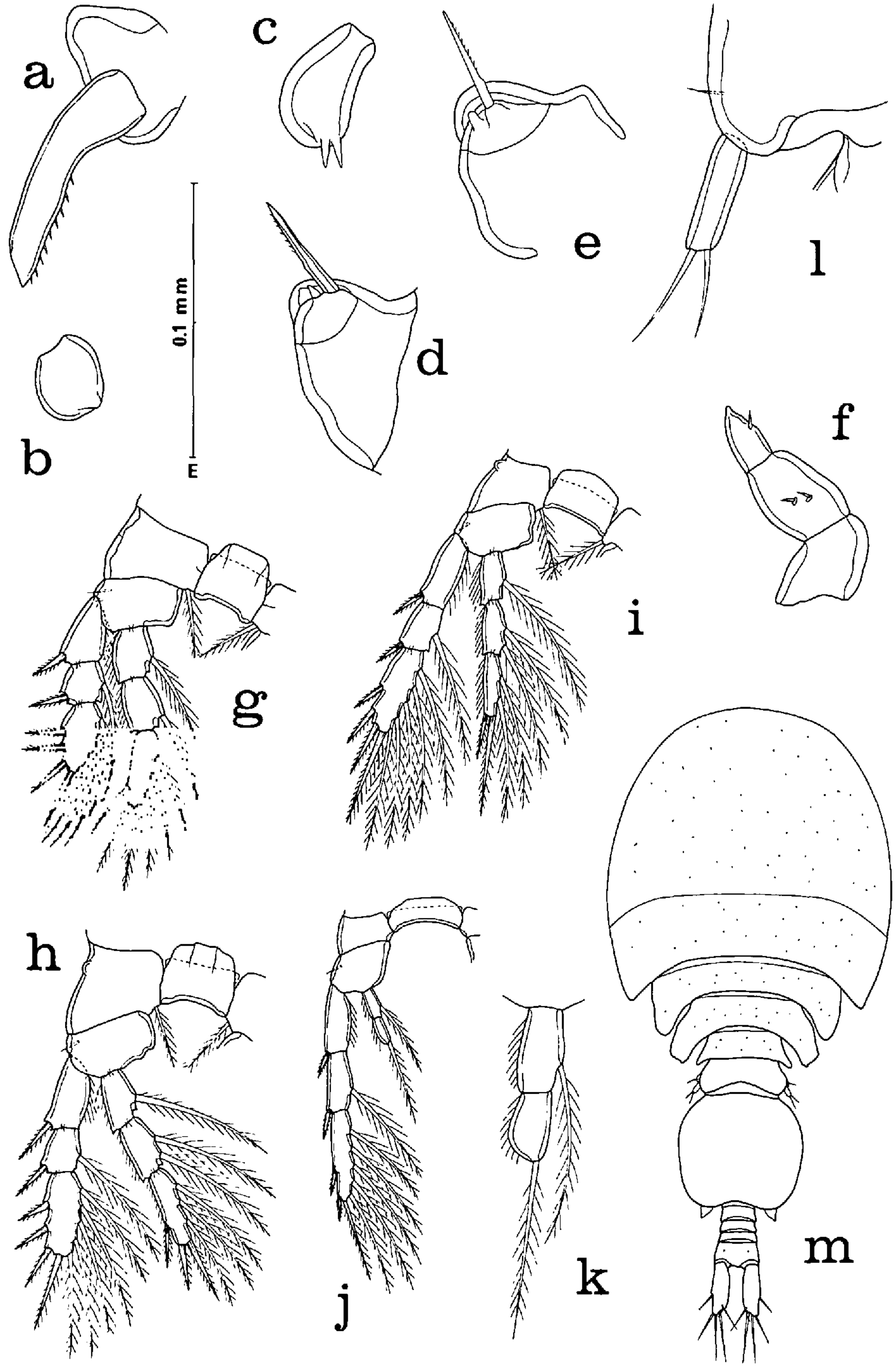

Figure 2. *Forhania philippinensis* new genus, new species. Female. a, mandible (scale D); b, paragnath, ventral (D); c, first maxilla, ventral (D); d, second maxilla, antero-inner (E); e, second maxilla, anterior (E); f, maxilliped, postero-inner (E); g, leg 1 and intercoxal plate, anterior (B); h, leg 2 and intercoxal plate, anterior (B); i, leg 3 and intercoxal plate, anterior (B); j, leg 4 and intercoxal plate, anterior (B); k, endopod of leg 4, anterior (D); 1, leg 5, ventral (D). Male. m, habitus, dorsal (A).

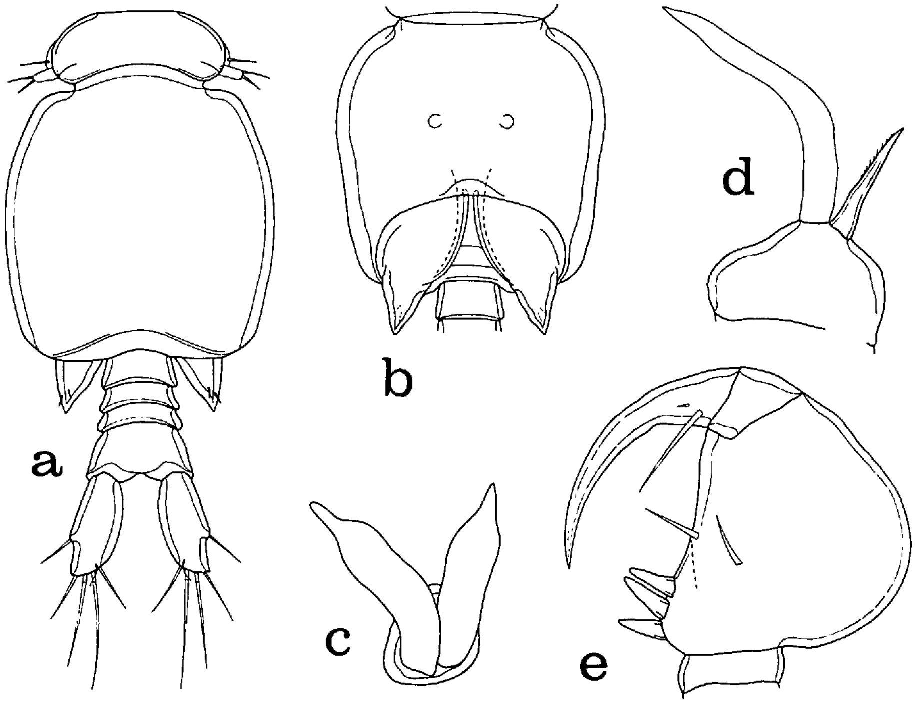

Figure 3. *Forhania philippinensis* new genus, new species, male. a, urosome, dorsal (scale B); b, genital segment and sixth pair of legs, ventral (B); c, first maxilla, ventral (D); d, second maxilla, anterior (E); e, maxilliped, anterior (D).

Thamnomolgus Humes, 1969

Thamnomolgus nodulus new species

Figures 4a–f, 5a–k, 6a–e

Type Series.—Holotype ♀, allotype, and 22 paratypes (17 ♀♀, 5 ♂♂) deposited in the National Museum of Natural History, Smithsonian Institution, Washington. Other paratypes, 3 ♀♀, 2 ♂♂, dissected, in the collection of the author. All the specimens were collected from the antipatharian *Antipathes* sp., in 30 m, Bohol Island, Philippines, 10°17.9′N, 124°10.9′E, 21 August 1975. Thomas Forhan collector.

Female.—Body (Fig. 4a) moderately broad, cephalosome slightly pointed anteriorly. Average length 1.12 mm (1.03–1.14 mm) and greatest width 0.46 mm (0.43–0.48 mm), based on 8 specimens. Greatest dorsoventral thickness 0.34 mm. Segment bearing first pair of legs separated from head by very weak transverse dorsal suture. Epimera of segments bearing legs 1–3 alate. Ratio of length to width of prosome 1.61:1. Ratio of length of prosome to that of urosome 1.65:1.

Segment bearing leg 5 (Fig. 4b) 65 × 172 μm. Genital segment 164 × 166 μm, subquadrate, lateral margins slightly rounded with small notch about midway. Genital areas situated dorsolaterally at level of notches. Each area with 2 very small setae. Three postgenital segments from anterior to posterior 37 × 101, 25 × 98, and 48 × 107 μm. Anal segment with smooth posteroventral margin.

Caudal ramus (Fig. 4c) 104 × 52 μm, ratio 2:1, with straight outer margin but convex inner margin. Outer lateral seta 55 μm, dorsal seta 9 μm, outermost terminal seta 40 μm, and 2 median jointed terminal setae 65 μm (outer) and 82 μm (inner), all smooth. Innermost terminal seta 50 μm with delicate lateral setules.

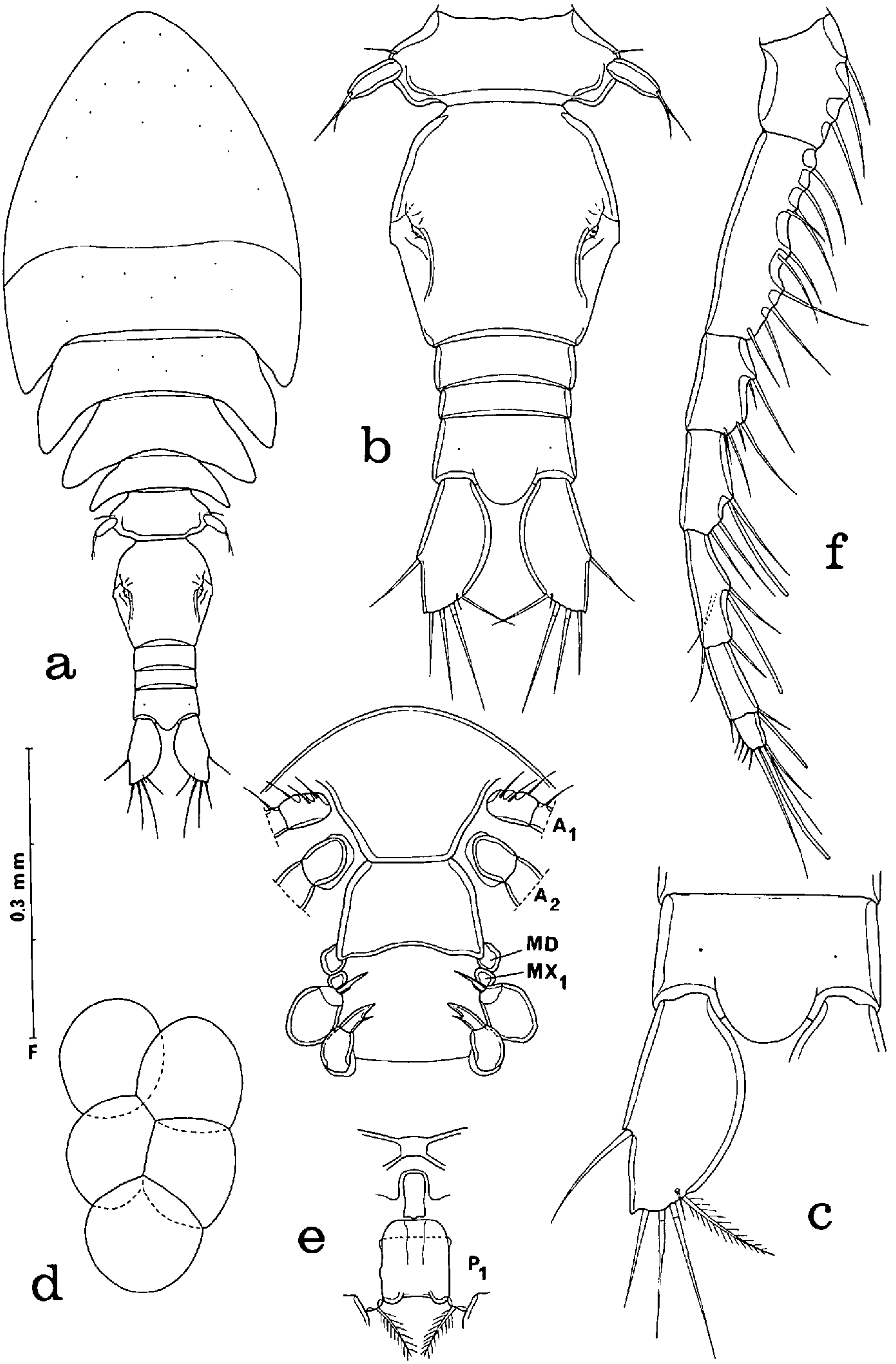

Figure 4. *Thamnomolgus nodulus* new species, female. a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, anal segment and caudal ramus, dorsal (C); d, egg sac, ventral (F); e, rostrum, labrum, and area between maxillipeds and first pair of legs, ventral (B); f, first antenna, antero-outer (E).

Dorsal surface of prosome with scattered refractile pores. Anal segment with pair of pores on dorsal surface.

Egg sac (Fig. 4d) 308 × 198 μm, containing 5 eggs with diameter 94-110 μm.

Rostrum (Fig. 4e) broadly truncated posteroventrally and fitted against anterior part of labrum. First antenna (Fig. 4f) 7-segmented, 263 μm long. Lengths of segments: 31 (52 μm along anterior margin), 74, 34, 35, 42, 26, and 13 μm, respectively. Last 2 segments indistinctly separated. All setae smooth.

Second antenna (Fig. 5a) 4-segmented, 130 μm long in reflexed position, 213 μm when stretched out. Formula: 0, 1, 3, and recurved terminal claw 34 μm. Fourth segment 36 μm along outer edge, 26 μm along inner edge, and 15.5 μm wide.

Labrum (Fig. 4e) with subtruncate posteroventral margin having shallow broad median indentation and 2 small lateral lobes. Mandible (Fig. 5b) elongated recurved blade bearing long setules along concave margin. Paragnath small lobe. First maxilla (Fig. 5c) minute, with 2 setae. Second maxilla (Fig. 5d) 2-segmented, with small second segment bearing 2 setae and extended as slender lash (?) barbed along one side. Maxilliped (Fig. 5e) 3-segmented, second segment with 2 small setae, third segment pointed with 1 seta.

Ventral area between maxillipeds and first pair of legs (Fig. 4e) slightly protuberant.

Legs 1–4 (Fig. 5f–i) with 3-segmented rami. Armature as follows:

P_1	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,4
			enp 0-1;	0-1;	I,5
P_2	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	I,II,3
P_3	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	II,2
P_4	coxa 0-1	basis 1-0	exp I-0;	I-1;	II,I,5
			enp 0-1;	0-1	II

Inner seta on coxa of leg 4 smooth, 24 μm long. Outer seta on basis of all 4 legs short. Leg 4 with exopod 170 μm long, endopod 77 μm. Two terminal spines on endopod (Fig. 5j) unequal, 26 μm and 6 μm.

Leg 5 (Fig. 5k) with unornamented free segment 52 × 21 μm, its 2 setae 40 μm and 35 μm. Dorsal seta held erect and not measurable. Leg 6 probably represented by 2 small setae on genital area (Fig. 4b).

Color of living specimens unknown.

Male.—Body (Fig. 6a) with broad cephalosome, in most specimens rounded anteriorly, in few slightly pointed as in female. Average length 0.81 mm (0.79–0.83 mm) and greatest width 0.34 mm (0.33–0.36 mm), based on 4 specimens. Greatest dorsoventral thickness 0.22 mm. Segment bearing first pair of legs separated from head by very indistinct dorsal transverse suture. Ratio of length to width of prosome 1.38:1. Ratio of length of prosome to that of urosome 1.55:1.

Segment bearing leg 5 (Fig. 6b) 52 × 153 μm. Genital segment slightly wider than long, 146 μm long without leg 6, 169 μm with leg 6, 159 μm wide. Four postgenital segments from anterior to posterior 19 × 70, 15.5 × 73, 15 × 78, and 36 × 91 μm.

Caudal ramus similar to that of female but smaller, 73 × 39 μm, ratio 1.92:1.

Dorsal surface of body with pores as in female.

Rostrum, first antenna, second antenna, labrum, mandible, paragnath, first maxilla, and second maxilla like those of female. Maxilliped (Fig. 6c) 4-segmented, assuming proximal part of claw to represent fourth segment. Second segment with

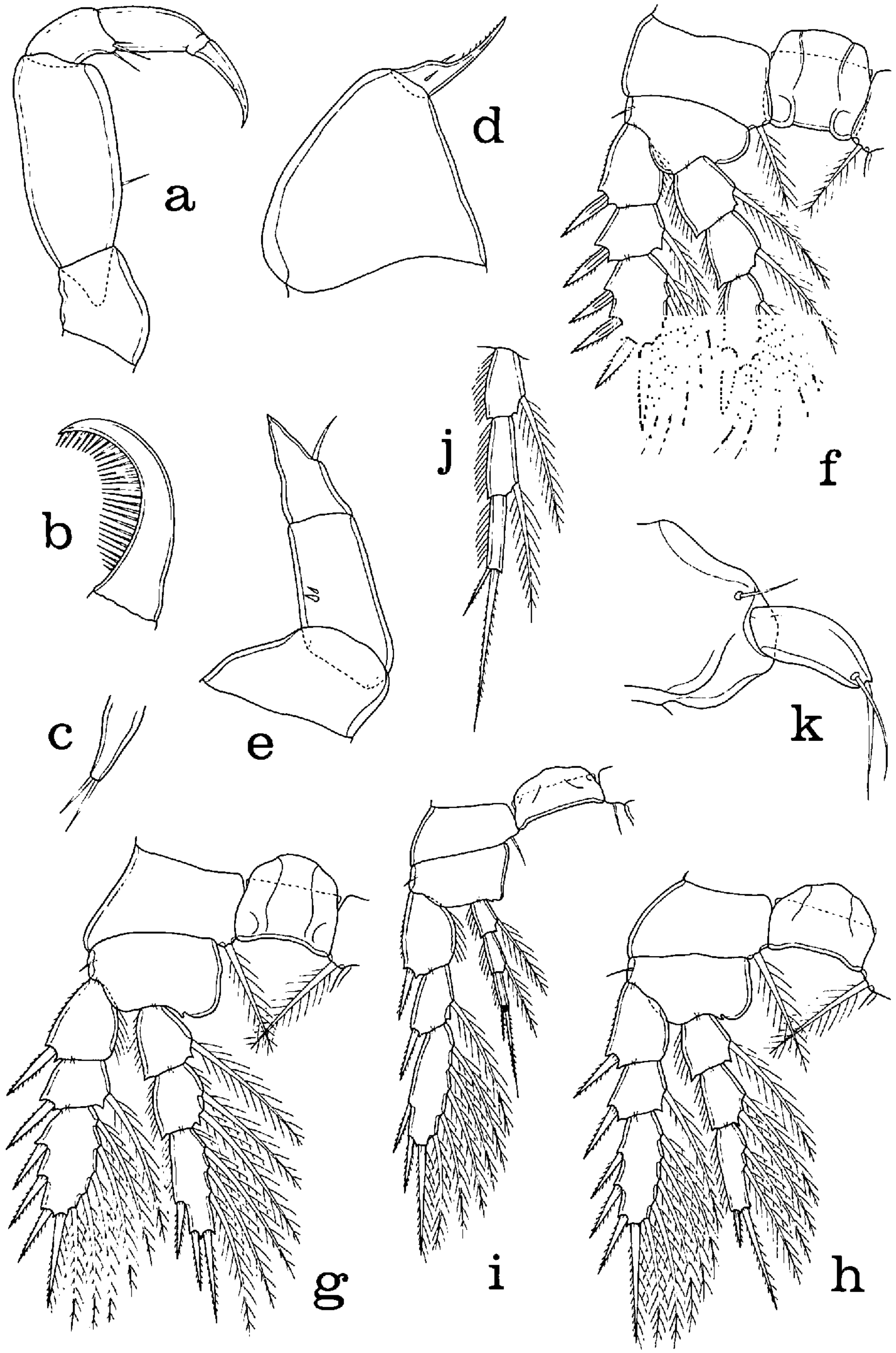

Figure 5. *Thamnomolgus nodulus* new species, female. a, second antenna, inner (scale E); b, mandible, anterior (D); c, first maxilla, anterior (D); d, second maxilla, antero-inner (D); e, maxilliped, postero-inner (D); f, leg 1 and intercoxal plate, anterior (B); c, leg 2 and intercoxal plate, anterior (B); h, leg 3 and intercoxal plate, posterior (B); i, leg 4 and intercoxal plate, anterior (B); j, endopod of leg 4, anterior (E); k, leg 5, dorsal (E).

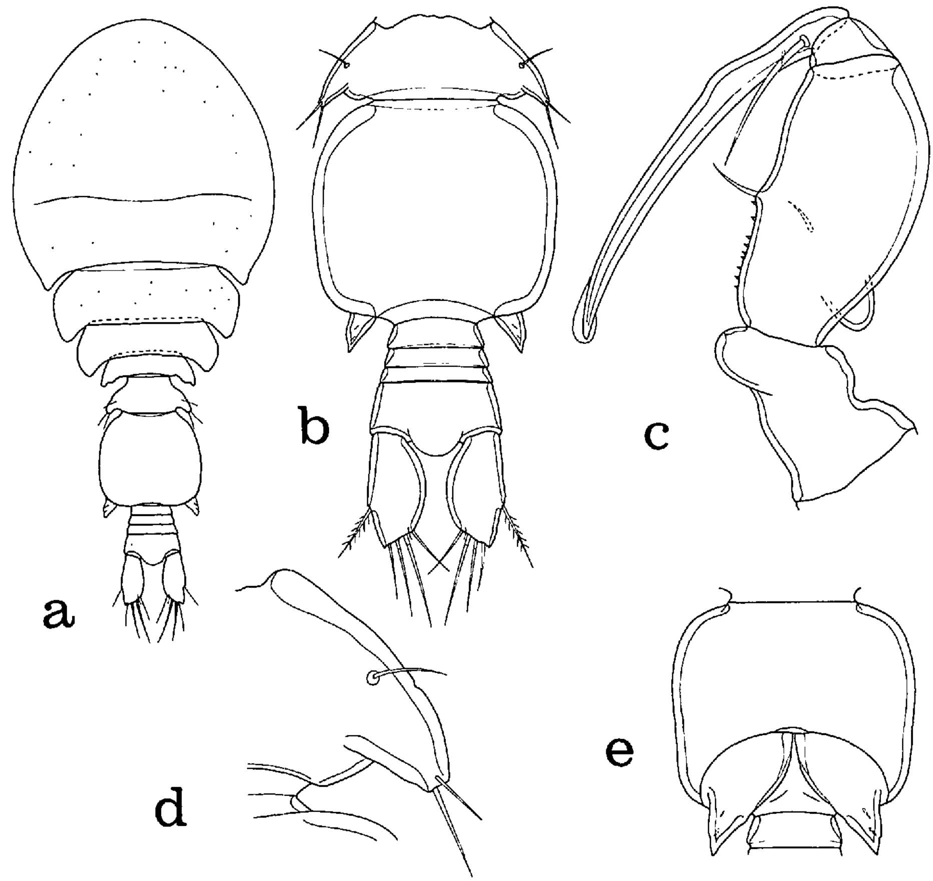

Figure 6. *Thamnomolgus nodulus* new species, male. a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, maxilliped, inner (E); d, leg 5, dorsal (D); e, genital segment with sixth pair of legs and first postgenital segment, ventral (B).

2 setae, prominent proximal antero-inner lobe, and small spines along postero-inner margin proximal to seta. Claw 150 μm long, convex margin with slight "elbow" about one-third from base, having 2 unequal proximal setae and small terminal lamella.

Ventral area between maxillipeds and first pair of legs as in female.

Legs 1–4 like those of female. Leg 5 (Fig. 6d) with small "free" segment not clearly separated from body but length (23 μm) indicated by slight notch on convex edge. Two terminal setae 18 μm and 26 μm. Leg 6 (Fig. 6e) posteroventral flap on genital segment, extending beyond posterior border of genital segment as triangular process bearing 2 minute setae.

Spermatophore not seen.

Color of living specimens unknown.

Etymology.—The specific name *nodulus,* Latin meaning little knob, alludes to the knob on the second segment of the male maxilliped.

Remarks.—*Thamnomolgus nodulus* differs from its only congener, *Thamnomolgus robustus* Humes, 1969, in several ways, although the general body form is similar. The two species may be compared as follows:

Thamnomolgus nodulus

Female—(1) front of cephalosome slightly pointed, (2) genital segment about as long as wide, (3) caudal ramus with ratio approximately 2:1, and (4) free segment of leg 5 elongate, 2.48:1.

Male—(1) body length 0.81 mm (0.78–0.83 mm), (2) claw of maxilliped 150 μm long, (3) second segment of maxilliped with conspicuous knob on proximal outer margin, and (4) endopod of leg 1 unmodified.

Thamnomolgus robustus

Female—(1) front of cephalosome rounded, (2) genital segment a little longer than wide, (3) caudal ramus 1.55:1, and (4) free segment of leg 5 suboval, 1.88:1.

Male—(1) body length 1.05 mm (1.02–1.10 mm), (2) claw of maxilliped 112 μm, (3) outer margin of second segment of maxilliped inflated proximally but lacking knob, and (4) endopod of leg 1 strongly sexually dimorphic.

Thamnomolgus robustus Humes, 1969

Specimens studied.—3 ♀♀, 1 ♂ from the antipatharian *Antipathes* sp., in 30 m, Bohol Island, Philippines, 10°17.9′N, 124°10.9′E, 21 August 1975. Thomas Forhan collector.

Remarks.—Previous records for this species are from *Antipathes myriophylla* Pallas, *A.* sp. cf. *spinosus* Gray, *A. abies* (Linnaeus), and *A. ericoides* Pallas, all in 20–35 m, near Nosy Bé, northwestern Madagascar (Humes, 1969) and from *Acanthogorgia aspera* Pourtalès, in 24 m, at Nosy Bé (probably an accidental association) (Humes and Stock, 1973).

Camotesia new genus

Diagnosis.—Sabelliphilidae. Urosome 5-segmented in female, 6-segmented in male. Caudal ramus with convex inner margin. Rostrum with truncate posteroventral margin. First antenna 7-segmented. Second antenna 4-segmented with 1 terminal claw. Mandible with unilaterally spinulose blade. First maxilla with 2 setae. Second maxilla 2-segmented. Maxilliped in female 3-segmented, in male 4-segmented, fourth segment represented by proximal part of claw.

Legs 1–4 with 3-segmented rami. Leg 3 with armature of third segment of endopod II,2. Leg 4 with endopod II,I,5; endopod 0-1; 0-1, 0, third segment being minute, spherical, and unarmed. Leg 5 with free segment separated from body segment and bearing 2 setae.

Other features as in the species described below.

Types Species.-Camotesia bullifera, new species.

Etymology.—The generic name is formed from Camotes Sea, the region where the copepods were collected.

Remarks.—*Camotesia* differs from both *Thamnomolgus* and *Forhania* in the endopod of leg 4 having three segments, but the third segment being small, spherical, and unarmed. The new genus differs further from *Thamnomolgus* as follows: (1) the free segment of leg 5 is separated from the body segment in both sexes, and (2) the third segment of the endopod of leg 1 is armed with 1,2,3. *Camotesia* is distinct from *Forhania* as follows: (1) the endopod of leg 1 in the male shows sexual dimorphism, (2) the first and second maxillae are similar in both sexes, and (3) the coxa of leg 4 has an inner seta.

Camotesia bullifera **new species**

Figures 7a–g, 8a–k, 9a–e

Type Series.—Holotype ♂, allotype, and 2 paratypes (1 ♀, 1 ♂) deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. Other paratypes, 2 ♀♀, 1 ♂, dissected, in the collection of the author. All the specimens were collected from *Antipathes* sp., in 30 m, Bohol Island, Philippines, 10°17.9′N, 124°10.9′E. Thomas Forhan collector.

Male.—Body (Fig. 7a) with broad prosome. Average length 0.81 mm (0.74–0.90 mm) and greatest width 0.35 mm (0.32–0.40 mm), based on 3 specimens. Greatest dorsoventral thickness 0.23 mm. Segment bearing first pair of legs fused with cephalosome. Epimera of segments bearing legs 2–4 extended and rounded. Ratio of length to width of prosome 1.35:1. Ratio of length of prosome to that of urosome 1.52:1.

Segment bearing fifth pair of legs (Fig. 7b) 60 × 153 μm. Genital segment 200 × 231 μm, wider than long (215 μm long including leg 6). Three postgenital segments from anterior to posterior 26 × 62, 18 × 66, 14 × 68, and 36 × 83 μm.

Caudal ramus (Fig. 7c) 60 × 31 μm, ratio 2:1, inner margin slightly convex. Outer lateral seta 28 μm, dorsal seta 6 μm, outermost terminal seta 39 μm, innermost terminal seta 40 μm, and 2 median terminal setae 65 μm (outer) and 78 μm (inner). All setae smooth.

Dorsal surface of body and ventral surface of rostrum and labrum with many small refractile pores.

Egg sac unknown.

Rostrum (Fig. 7d) truncate posteroventrally. First antenna (Fig. 7e) 7-segmented. Lengths of segments: 21 (34 μm along anterior margin), 57, 26, 24, 31, 23, and 8 μm, respectively. Formula for armature: 3, 10, 6, 3 + 1 aesthete, 4 + 1 aesthete, 2 + 1 aesthete, and 7 + 1 aesthete. All setae smooth.

Second antenna (Fig. 7f) 4-segmented, 224 μm long when stretched out. Formula: 0, 1, 3, and 1 terminal claw 40 μm long.

Labrum (Fig. 7g) broad, strongly indented on both sides forming 2 posterolateral lobes; posteroventral margin with pair of small spherical protuberances. Mandible (Fig. 8a) slender blade with long setules along one side. Paragnath small lobe. First maxilla small with 2 setae. Second maxilla (Fig. 8b) 2-segmented, second segment spikelike with 2 small setae proximally and row of small spinules distally. Maxilliped (Fig. 8c) 4-segmented, assuming proximal part of claw to represent fourth segment. First segment unarmed. Second segment expanded, with 2 inner setae, row of small inner marginal setules, and lobelike protuberance on proximal antero-outer surface. Small third segment unarmed. Claw 109 μm long, bearing 2 unequal proximal setae.

Ventral area between maxillipeds and first pair of legs as in Figure 7d.

Legs 1–4 (Fig. 8d, f–h) with 3-segmented rami. Formula for armature as follows:

P_1	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,4
			enp 0-1;	0-1;	1,2,3
P_2	coxa 0-1	basis 1-0	exp I-1	I-1;	III,I,5
			enp 0-1;	0-2;	I,II,3
P_3	coxa 0-1	basis 1-0	exp I-0;	I-1;	III,I,5
			enp 0-1;	0-2;	II,2
P_4	coxa 0-1	basis 1-0	exp I-0;	I-1;	II,I,5
			enp 0-1;	0-1	0

Inner coxal seta well developed in all 4 legs. Outer seta on basis small. Third

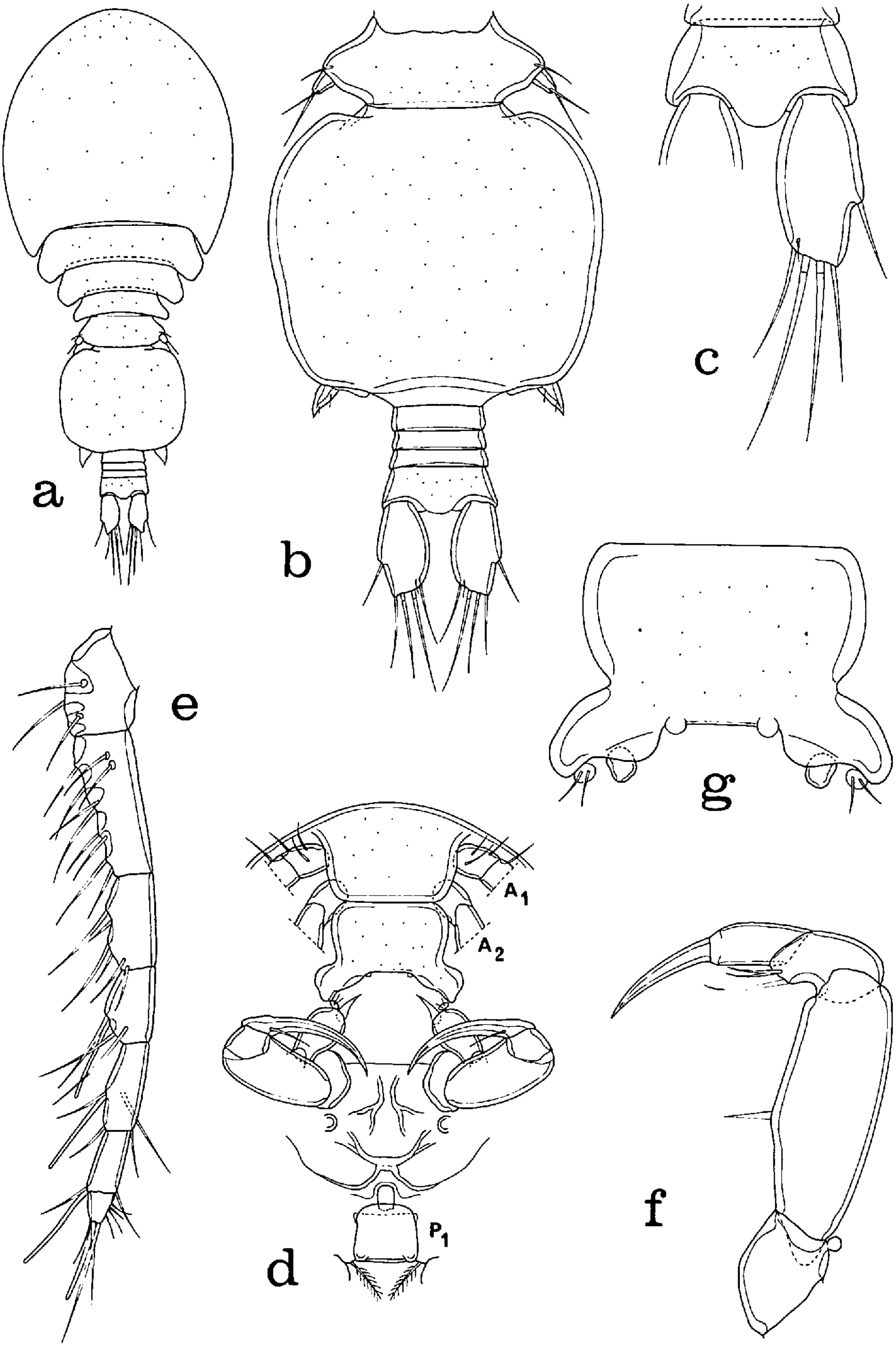

Figure 7. *Camotesia bullifera* new genus, new species, male. a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, anal segment and caudal ramus, dorsal (E); d, rostrum, labrum, and area between maxillipeds and first pair of legs, ventral (B); e, first antenna, outer (E); f, second antenna, inner (E); g, labrum, with paragnaths and first maxillae, ventral (E).

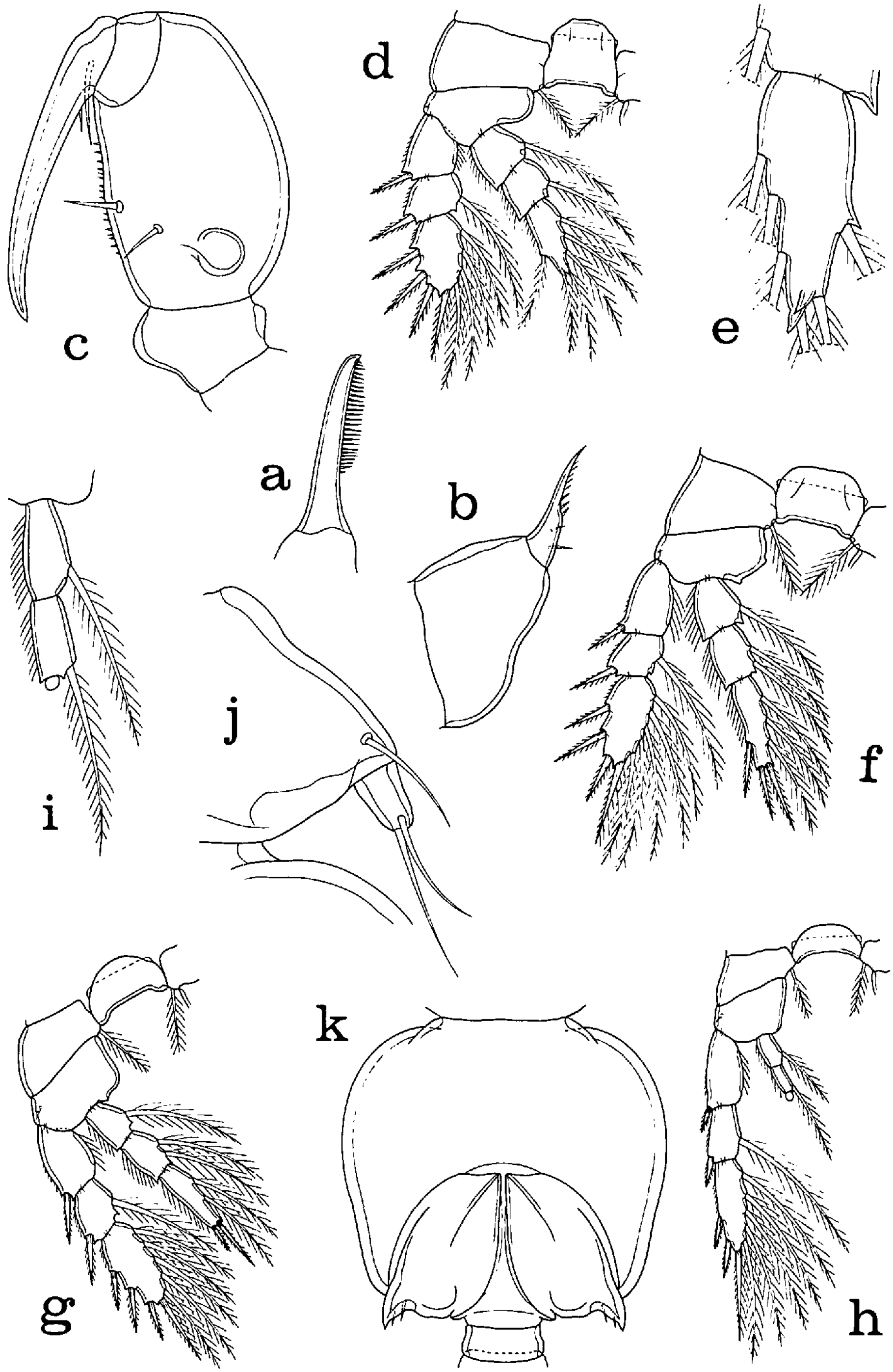

Figure 8. *Camotesia bullifera* new genus, new species, male. a, mandible, ventral (scale D); b, second maxilla (E); c, maxilliped, antero-outer (E); d, leg 1 and intercoxal plate, anterior (B); e, third segment of endopod of leg 1, anterior (D); f, leg 2 and intercoxal plate, anterior (B); g, leg 3 and intercoxal plate, anterior (B); h, leg 4 and intercoxal plate, anterior (B); i, endopod of leg 4, anterior (D); j, leg 5, dorsal (D); k, genital segment with sixth pair of legs and first postgenital segment, ventral (B).

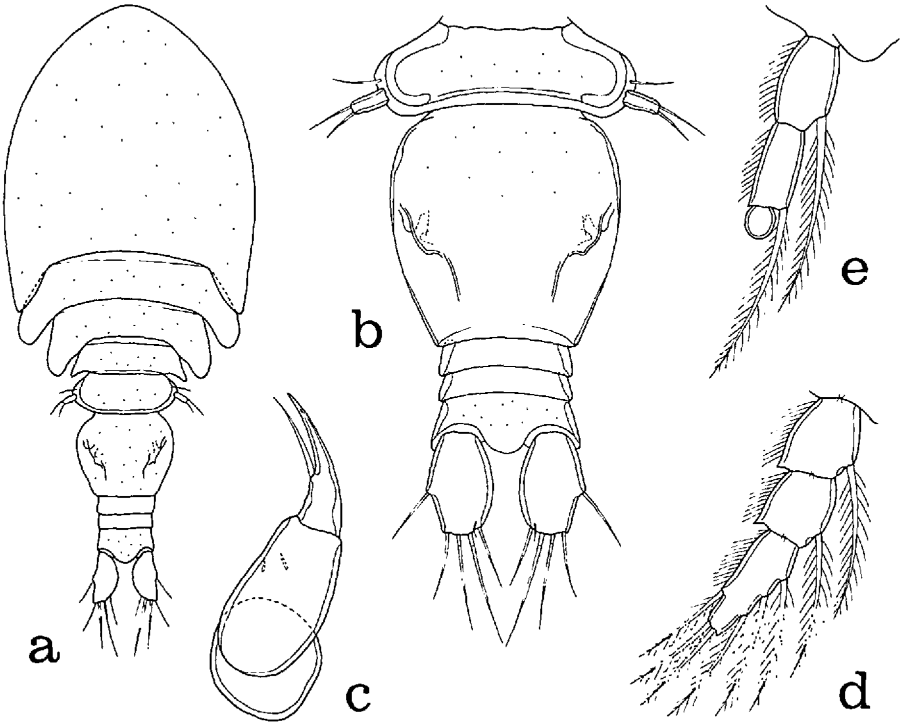

Figure 9. *Camotesia bullifera* new genus, new species, female. a, habitus, dorsal (scale A); b, urosome, dorsal (B); c, maxilliped, outer (D); d, endopod of leg 1, anterior (C); e, endopod of leg 4, anterior (D).

segment of endopod of leg 1 (Fig. 8e) showing sexual dimorphism in having 2 terminal spiniform processes. Leg 4 (Fig. 8h) with exopod 153 μm long. Endopod 47 μm. First segment 23 × 13 μm, second segment 21 × 10.5 μm, and small spherical unarmed third segment 5 × 5 μm (Fig. 8i). Leg 5 (Fig. 8j) with small unornamented free segment 15.5 × 11 μm, distinctly separated from body segment. Two terminal setae 31 μm and 42 μm. Dorsal seta 26 μm. All setae smooth. Leg 6 (Fig. 8k) probably represented by posteroventral flap on genital segment bearing 2 small dorsal setae.

Spermatophore unknown.

Color of living specimens unknown.

Female—Body (Fig. 9a) resembling in general form that of male. Average length 0.82 mm (0.79–0.85 mm) and greatest width 0.39 mm (0.37–0.40 mm), based on 2 specimens. Greatest dorsoventral thickness 0.28 mm. Ratio of length to width of prosome 1.46:1. Ratio of length of prosome to that of urosome 1.62:1.

Segment bearing leg 5 (Fig. 9b) 52 × 148 μm. Genital segment 161 × 159 μm, about as long as wide, in dorsal view with moderately rounded smooth lateral margins. Genital areas situated dorsolaterally near middle of segment. Each area with 2 very minute setae. Three postgenital segments from anterior to posterior 34 × 94, 26 × 88, and 44 × 99 μm.

Caudal ramus similar to that of male but larger, 75 × 47 μm.

Egg sac unknown.

Surface of body with refractile pores as in male.

Rostrum, first antenna, second antenna, labrum, mandible, paragnath, first maxilla, and second maxilla as in male. Maxilliped (Fig. 9c) 3-segmented with 2 small setae on second segment, third segment with its seta reaching slightly beyond tip of claw.

Ventral area between maxillipeds and first pair of legs as in male.

Legs 1–4 like those of male, except for sexual dimorphism in third segment of endopod of leg 1 (compare Figs. 3d, e and 9d). Leg 4 with spherical third segment of endopod 6 × 6 μm (Fig. 9e) and slightly more sclerotized than in male. Leg 5 (Fig. 9b) with unornamented rectangular free segment, 34 × 16 μm. Leg 6 probably represented by 2 small obscure setae on genital area.

Color of living specimens unknown.

Etymology.—The specific name *bullifera,* from Latin *bulla,* a bubble, and *fero,* to bear or carry, refers to the small bubble-shaped third segment of the endopod of leg 4.

DISCUSSION

In the three genera *Thamnomolgus, Forhania,* and *Camotesia* the truncate nature of the rostrum and the labrum is strikingly similar and differs from the condition in all other sabelliphilid genera. In the Sabelliphilidae the usual form of the rostrum is either rounded, pointed, rarely bifid, or weakly developed. The labrum in this family is usually medially incised and has two lateral lobes. In *Chauliobion tectuliferum* Humes, 1980, the labrum has a truncate posteroventral margin; however, in this species the labrum has two lobes, as in congeners.

The third segment of the endopod of leg 3 in the three sabelliphilid genera included in this paper has the formula II,2. Among the 20 other genera in this family this formula occurs only in *Lichothuria mandibularis* Stock, 1968 (an associate of holothurians).

Whether the truncate form of the rostrum and labrum is derived or primitive is difficult to say. However, the similarity of *Thamnomolgus, Forhania,* and *Camotesia* in this respect and the consistent formula for the endopod of leg 3 suggest that the three genera are related.

KEY TO THE THREE SABELLIPHILID GENERA FROM CNIDARIANS

1a.	Leg 4 with endopod 2-segmented	*Forhania*
1b.	Leg 4 with endopod 3-segmented (though third segment may be very small)	2
2a.	Leg 4 with endopod 3-segmented, formula 0-1; 0-1; II	*Thamnomolgus*
2b.	Leg 4 with endopod 3-segmented, but third segment very small, spherical, and unarmed, formula 0-1; 0-1; 0	*Camotesia*

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